The patients' perception of recovery after coronary angioplasty

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ABSTRACT:– Coronary angioplasty and stent placement is associated with short hospital stays. Patients are expected to recover at home, alone, following limited care time with nurses. The purpose of the study was to describe participants' perceptions of recovery after angioplasty. Eight men and three women were interviewed 1 month after discharge from hospital. Verbatim transcripts were analysed for major themes using the qualitative techniques of grounded theory.

Data analysis revealed three major categories: awareness of the problem, coping response and appraisal of the situation. These were linked via a problem solving process. In step one, the problem was identified. In step two, coping responses were taken to try and solve the problem. In step three, the results of the coping responses were appraised or evaluated. These categories were further defined by four phases identified as: pre-admission, admission, during the angioplasty and recovery.

This paper describes the recovery phase. Awareness of the problem in the recovery phase was associated with 'relief from chest pain' for most participants. In contrast, anxiety continued and was associated with 'uncertainty over future health'. Participants described coping responses of "taking control of their life again" by undertaking both physical and psychological strategies. Finally, the situation was appraised to be either a 'good' or a 'bad' recovery. This appraisal was based on such considerations as the absence of chest pain, improvement in well-being and energy levels. The results of this study highlight patients' concerns and support the need for greater emphasis on their psychosocial needs. This care must be provided within the time constraints of short hospital stays. Nurses must also consider providing support to patients in the pre-admission and recovery phases.

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INTRODUCTION

Coronary artery disease remains the leading cause of morbidity and mortality in men and women in Australia [1, 2]. Percutaneous transluminal coronary angioplasty (PTCA) and intracoronary stent placement have emerged as alternative treatment choices to coronary artery surgery in the management of coronary artery disease. PTCA offers immediate relief of symptoms, low risks and a swift return to normal activities [3, 4].

Improvements in technique and technology plus the current forces of economic constraint have resulted in large numbers of patients being ushered through the hospital system with a shorter and shorter length of stay. Negative patient responses to such a high turn-over system of care include feeling dehumanised, isolated and frustrated with a lack of control over their physical and personal health [5, 6]. In the past, patients would be admitted, undergo the PTCA, recover and then go home. Now, with a 24 hour length of stay, patients are admitted, undergo PTCA, go home and are expected to recover on their own. Research in PTCA and stent placement shows that the medical need for admission to hospital is becoming obsolete. One such study reports the safety and efficacy of stent placement in patients who were treated on an outpatient basis [7]. Such results have generated local interest in organisations that are now considering outpatient PTCA and stent placement.

LITERATURE REVIEW

Few studies have addressed the experiences, issues and concerns confronting patients as they endeavour to recover after angioplasty and stent placement. White and Frasure-Smith [8] compared the uncertainty and symptoms of psychological stress of 22 PTCA and 25 coronary bypass surgery patients. The authors reported that PTCA patients experienced more uncertainty than coronary bypass surgery patients ($p<0.05$), however, there was no significant difference in psychological stress between the two groups. Sources of uncertainty for PTCA patients included the documented risk of the return of symptoms (30 per cent risk of restenosis or artery re-narrowing) and the limited time available during the short hospital stay for adequate education of the patient and family [8].

This was in contrast to the Gulanick and Naito [9] study that reported 61.9 per cent of the post PTCA participants did not expect restenosis to occur (n=54). Furthermore, 86 per cent felt that they

had achieved their expected benefits and 90 per cent reported that they would repeat the procedure if needed. The authors concluded that the patients had positive feelings about their experiences of angioplasty and were not overly concerned with restenosis [9].

The concept of uncertainty was raised again in a further study that examined 45 patients' reactions to recovery and lifestyle changes following PTCA [10]. Emergent themes included both acceptance and uncertainty about the future. Some participants had adopted a philosophical approach to coping with uncertainty whilst others were fearful of an early death. Although most participants were engaged in lifestyle modification, some expressed a sense of powerlessness to stop the progression of the coronary artery disease and had not attempted lifestyle modifications. Among those attempting change, both satisfaction and frustration over lifestyle modifications were reported [10].

Although these studies provide meaningful research into angioplasty, the relative lack of information about patients' experiences of recovery was apparent. This study aimed to provide a deeper understanding of the patients' perspectives including the needs, concerns and challenges facing them as they recover.

METHODS

Design

The study used a grounded theory design. Data were gathered from semi-structured, taped interviews designed to explore the recovery experiences of coronary angioplasty patients. The purpose of grounded theory is to understand the concerns, actions and behaviours of a group of individuals and, through their own language, explain those patterns of behaviour at a higher level of abstraction or theory [11]. In-depth interviewing is an appropriate method to gain access to the individual's language and interpretations of social reality [12].

Study participants

The participants included eight men and three women. Selection criteria included men and women over the age of 18 from all cultural groups who could communicate in English. Participants who resided in the metropolitan area and had undergone elective PTCA were selected. Those patients undergoing emergency coronary angioplasty in the setting of acute myocardial infarction were excluded, as their recovery patterns were different to that of elective angioplasty patients and included a longer hospitalisation and a graded cardiac mobilisation [13].

Data collection

Hospital Ethics Committee approval was granted prior to commencement of the study. Information packages were given to participants and any questions or concerns were addressed. Informed consent was obtained from all participants prior to the interview. Participants were given the opportunity to withdraw at any stage during the research process.

The semi-structured interviews allowed the researcher to clarify issues and gain further explanations and information during each interview. In this way, data saturation could be achieved. The interviews were taped and transcribed verbatim, therefore enhancing accuracy and validity of the interview data [12]. The researcher verified each tape recording against the transcript to ensure it was an accurate record of the interview. All participants were assigned a code number and pseudonyms in order to preserve anonymity.

Data analysis

The constant comparative method was utilised during the concurrent data collection and analysis to identify and develop recurrent themes and ideas. The aim was to generate theoretical constructs that, along with codes, categories and their properties, formed a theory that encompassed as much behavioural variation as possible [14]. By constantly comparing codes and categories, the researcher identified patterns, similarities and differences. Comparing for similarities enabled the basic properties of a category to be defined, whilst differences enabled boundaries and relationships between categories to be clarified [14]. These categories were further broken down, conceptualised and put back together in new ways through grounded theory techniques including open and axial coding procedures and memoing [15].

The outcomes of the continuing analysis suggested additional questions to be asked at the upcoming interviews. In this way, theoretical sampling of data was achieved through directed questioning. This process enabled constant comparison of patient perceptions to either strengthen or challenge the emerging categories. The constant comparative method also uncovered a depth of range and variation within the categories. Morse [16] referred to this process as data saturation, which involved eliciting all forms or types of occurrences and valuing variation over quantity. Morse [16] reinforced the importance of gaining rich detailed descriptions over merely noting the number of times something is stated. By the time the last of the 11 interviews were analysed, no new information was identified that did not fit within the previously identified and defined categories. Thus the data was dense, rich and fully saturated [14].

Rigour in the study

According to Sandelowski [17], failure to achieve validity, reliability and objectivity can limit the adequacy of the study.

Validity is the overall concept used to refer to the truth-value of the study and its representation of reality [18]. Low inference descriptions, that is, verbatim accounts of information provided by participants, were used throughout the results section. This use of rich excerpts from primary transcripts served to enhance data credibility [18]. The members of the research team independently reviewed raw transcripts for emergent themes as a means of enhancing dependability. These themes were compared and discussed for agreement or disagreement on themes. Brink [19] argued that the constant comparative method and the search for negative cases inherent in grounded theory provide for validity and reliability in a study adhering to its techniques. Participant selection and theoretical sampling continued until all categories were saturated and no new information was gained.

Reliability is a constituent element of validity and refers to the extent to which random variation may have influenced the study results [18]. Chenitz and Swanson [11] suggested a test for reliability was the applicability of the study to similar settings and to other types of problems over time. Descriptions of the method, data collection and analysis have been documented in detail in an attempt to facilitate this process.

RESULTS

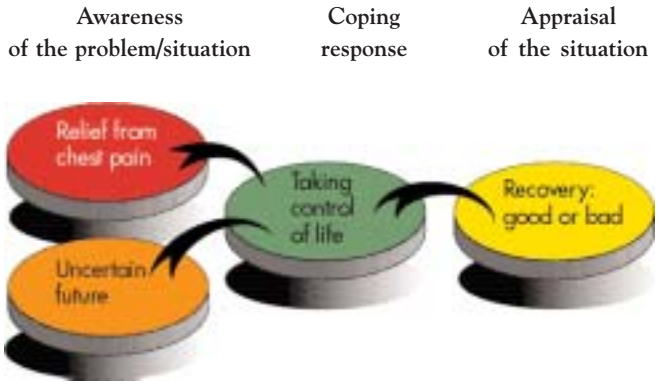
The interviews were conducted 1 month after discharge from hospital following elective PTCA. The recovery phase was identified as the fourth phase of the angioplasty experience. The first three phases were pre-admission, admission for PTCA and the PTCA procedure.

Analyses of the recovery phase data revealed three major categories:

- Awareness of the problem or situation.
- Coping response.
- Appraisal of the situation.

Two subcategories, namely chest pain and anxiety, were identified within the first category. The categories were linked describing the problem solving process the participants used during their recovery experience. In step one, the problem or situation was recognised. In step two, coping responses were undertaken to try and solve the problem. In step three, the results of the coping responses were appraised or evaluated. This three-step process supports Leventhal & Johnson's[20] self-regulation theory in explaining how people adapt in response to a perceived health problem. The relationship between categories is represented in Figure 1.

Figure 1. Model of participants' perceptions of events occurring during recovery after angioplasty.



Awareness of the problem or situation

Relief from chest pain

[NB: Quotations taken verbatim from the collected data are presented in italics and indented throughout the results section. Each participant's coding number and sentence number are placed in brackets behind the quotation].

Most participants reported a total relief or a reduction of chest pain following their angioplasty. This relief was viewed as very positive because chest pain was the major motivation for undergoing the angioplasty:

> *It's just so wonderful to me to be able to go out shopping and not get these terrific pains and think 'Where can I find a chair to sit down and relieve this'? So now, it's the relief that I don't have to worry about that (7/1.41).*

Two participants reported ongoing chest pain that was identified as a problem. One participant had experienced recurrent unstable pain perhaps indicating a blood clot inside the stent precipitating further myocardial damage. This participant took the appropriate coping response of presenting to hospital. The participant underwent subsequent emergency coronary angiography. The second participant also experienced recurrent chest pain, in addition to bleeding from the bowel. The coping response of presenting to hospital was also undertaken and further treatment was initiated. It would appear that these two participants did not gain the same level of physical and psychological benefit when compared to other participants.

Anxiety - an uncertain future

Four participants expressed little concern for future health:

> *I know that it can fail [restenosis], but I will cope if it ever happens. So there is nothing to worry about (11.54).*

However, seven participants revealed anxiety over an uncertain future:

> *Now I worry about the future, I worry that I won't be able to continue doing what I am doing (4.15).*

Two participants experienced high levels of anxiety during the recovery phase. In one case, the anxiety appeared to be related to the presence of chest pain and complications from the angioplasty. In the other case, the recovery phase was very anxiety-provoking and led to feelings of low self-esteem.

Coping responses

Participants described coping responses directed toward resuming control of their life again. This involved both psychological and physical coping responses. Psychological strategies involved playing down the experience, not telling other people about it and proving they were still the same people as prior to the angioplasty:

> *My wife and family said 'don't do this, don't do that'. But I did. Just to prove to myself that I could still do things (6.15).*

Participants also spoke of physical coping strategies such as compliance with medications and activity instructions, monitoring for complications and groin healing and risk factor modification. While the degree to which such behaviours were implemented varied from individual to individual, all participants engaged in these behaviours to some degree.

All participants reported compliance with taking the prescribed medications. The majority described no complications or concerns regarding the medication regimen, although one participant did experience a bleeding complication from the medication and required hospitalisation. Everyone reported compliance with activity restrictions, such as avoiding heavy lifting, in the first 10 days after the procedure.

Monitoring for groin healing was a recovery strategy that continued over the first 4 weeks after discharge. Treatment was sought if the person was concerned about the presence of lumps (haematoma), bruising or bleeding at the puncture site. However, in most cases bruises and lumps appeared as minor complications and were not a cause of concern.

Participants also reported monitoring for complications, with chest pain being the primary focus:

> *Still I had worry for 2 weeks you know. 'Cause that's the time when the coil [stent] can block again, you know. It was on my mind, you know (2.4).*

Return to normal activities was also identified as a physical coping strategy. Activities included return to previous employment, housework, charity work, gardening, social activities and driving. Two participants who were employed had returned to work by week 4 post discharge. The nine other participants were retirees who were more focussed on home and social life activities.

All participants expressed some knowledge of low fat diets although their level of knowledge varied from limited to specific knowledge of foods and low fat recipes. The identified sources of knowledge included the doctor and the media. Some participants had been on a low fat diet for up to 7 years before the angioplasty, others had made minor modifications to their diet. Only four patients expressed knowledge of cardiac rehabilitation programs. However, these four had chosen not to attend, citing high costs and long distances as the reasons.

An unexpected result was the nine participants who described feeling low energy levels, with ongoing tiredness and sleep disturbances at 4 to 6 weeks post discharge. This lack of energy considerably limited their activities:

> *So, as I say, it's been very kind to the body. Yes, and you get over it a lot quicker. The only thing I feel that I don't have the energy. I'm finding it hard to get my energy back (7/1.54).*

Prior experience did not appear to influence energy levels. Five participants had undergone prior angioplasty, bypass surgery or major surgery. Four of these five had commented on feeling low in energy and tired. Age also did not appear to be related to energy levels. Of the two youngest participants, both in their early 50s, one experienced low energy and the other experienced normal energy levels. The presence of chest pain, complications and depressive symptoms did appear to be related to energy levels for two participants:

> *I've been sick in myself, and as soon as I do anything physical I get the pain in the chest and I start to get drained of energy. And I am happy to lie down most of the time, and I feel very tired (12.34).*

> *I was always healthy before, so I feel frail. I want to lay down and relax a lot more and rest (4.29).*

Appraisal of the situation

Appraisal of the situation was the final category, with the recovery being described as either 'good' or 'bad'. Nine participants described a 'good' recovery based on indicators such as relief from chest pain and increased feelings of well-being:

> *I found it good, like I could go back to work, just to say I could take up all the same activities, you know. I felt wonderful, you know. I didn't feel exhausted, no, I felt on top of the world (2.11).*

Two participants described a 'bad' recovery, with the presence of complications and difficulties in readjustment influencing their perceptions:

> *I didn't have a good recovery at all because I was bleeding from the bowel (12.31).*

> [Researcher- Have your feelings of well-being improved?]

> *Not in any shape or form, and as far as pain is concerned, I think as a consequence of my overall situation, it does induce the chest wall pain a lot more (12.52).*

One other participant who experienced high levels of anxiety provided the following perception of recovery:

> *I had three or four times a day, very strong pain in the high part of my back and also some pain in my chest, which I believe, is stress. In fact, when I have had the pain and put the [anginine] spray under the tongue and that hasn't relieved it… So I think that is an enormous amount of stress related feeling to have in the recovery because you're not sure (4.6).*

These two cases indicated that the presence of complications and difficulties in psychological adjustment after angioplasty were influencing factors that lead to the appraisal of a 'bad' recovery.

DISCUSSION

The study findings provided an insight into the patients' perceptions and experiences of recovery following angioplasty. Every participant appeared to be describing a problem solving process applied to his or her experiences. The study aimed to generate new data and was not analysed from the perspective of a pre-determined framework. However, the problem solving process that involved the three steps outlined above supported the self-regulation theory as proposed by Leventhal & Johnson [20].

Awareness of the problem or situation

In step one, the problem was recognised. Most participants reported that chest pain had been substantially relieved. No relief was gained for some, which contributed to perceptions of a 'bad' recovery. Anxiety was reported in relation to uncertainty over future health and potential complications. White and Frasure-Smith [8] found that angioplasty patients reported more feelings of uncertainty than bypass patients did at 1 and 3 months post procedure. Gulanick *et al.* [10] also reported uncertainty in their study of recovery patterns after angioplasty and emphasise that health care professionals need to be more open about uncertainty. This may help patients be more accepting of uncertainty, rather than fearful and open to a new view of life and new possibilities.

Coping responses

Psychological coping responses were implemented to 'take control' and deal with uncertainty and lingering feelings about the hospital experiences. Such responses included playing down the experience to others, not telling people at all and being philosophical about the future. These findings were consistent with a study by Moser and Dracup [21], which reported that feelings of perceived control were important for psychosocial recovery after a cardiac event, and supported the concept of taking control in an endeavour to recover. Mahler and Kulik [22] found in those patients with greater perceived control over recovery in the hospital phase after bypass surgery, this perception was associated with a shorter hospital stay.

Physical coping responses included regaining control by increased physical activity, compliance with medications, monitoring for complications and making dietary modifications. These findings support the Gulanick *et al.* [10] study that reported participants sought control over their disease by complying with and implementing lifestyle modifications such as exercise and diet. Almost every participant in the current study was attempting to eat a low fat diet, although most of the men relied on their wives to organise the food for them. On the other hand, no participants reported commencing or resuming an exercise program when interviewed at 4 to 6 weeks after discharge. This may be linked to the unexpected finding that most participants were feeling low in energy with associated tiredness and sleep disturbances.

The low energy levels may also be a mediating factor in the relatively low numbers of participants who had been able to fully resume their normal activities. This finding was unexpected because the recovery period following angioplasty was reported to be short [23] as the procedure was performed under local anaesthetic with minimal physiologic disruption, for example open surgical wounds.

Low energy levels were reported in a study exploring the recovery experiences of patients 2, 4 and 6 weeks after cholecystectomy with an average length of hospitalisation of 6 days [24]. Baker described a passivity phase in which subjects were sedentary, lacked energy and expressed frustration at not being able to perform activities. The length of this passivity phase was 6 days to 5 weeks. These findings may lead to insights into the current study; the time of low level activity and low energy were similar. However, the angioplasty patients had undergone a procedure under local anaesthetic, in contrast to the cholecystectomy patients, who had undergone general anaesthetic. Most participants reported low energy levels after the angioplasty. The concept of energy levels is relevant for nurses when providing discharge education and information on recovery expectations for angioplasty patients and their families. It is an area worthy of further research.

None of the participants in the current study were attending a cardiac rehabilitation program, citing high costs and long distances as the reasons. Gaw [25] found similar reasons for the 14 people in her study not attending cardiac rehabilitation. They felt they did not need to attend as they were home and feeling better with no cardiac symptoms [25]. This was in contrast to Gulanick *et al.* [10] who reported 42 per cent of their participants were attending a rehabilitation program. Such varying levels of interest in cardiac rehabilitation could present an ongoing challenge for health care providers in terms of numbers of enrolments in programs. It also highlights the need for additional support services to compliment formal cardiac rehabilitation programs, for example, out of hospital nursing support services.

Appraisal of the situation

Participants described their reflective appraisal of the recovery experience. Nine participants described a 'good' recovery based on indicators such as the absence of pain, psychological improvement and increased energy levels. Two participants described a 'bad' recovery; the presence of post-angioplasty complications and lack of psychological improvement influenced this appraisal. These results are consistent with those reported by Foulger [26] in a study of 130 day case coronary angiography patients. These researchers reported data on recovery outcomes following discharge.

Post procedure complications and poor psychological outcomes were common with 40 per cent of participants experiencing delayed mobilisation due to groin pain. In the current study, five of the 11 participants reported groin complications (haematoma). In contrast to Foulger [26], however, none had reported delayed mobilisation due to groin pain.

Foulger also described other factors that affected participants' recovery including physical tiredness, depression, chest pain, anxiety about their condition and light-headedness. Similarly, participants in the current study reported low energy levels, presence of complications and psychological symptoms as factors that impeded recovery.

LIMITATIONS OF THE STUDY

Several potential limitations of the study were identified.

First, the researcher did not contact the participants after the interview transcript was complete in order to validate interpretation of the data. This step may have added strength to the overall validity of the study. However, participants were asked to clarify the meanings of responses during the taped interview and any unclear statements were investigated through further questioning by the researcher [27].

Second, the interviews were conducted 4 weeks following PTCA, therefore the participants were requested to recall past events. A number of staged interviews whilst the participants were experiencing recovery may have identified different perceptions.

Third, the current study was small and specific to the first month following angioplasty. Thus the processes described cannot be generalised to include recovery events occurring later than one month after PTCA.

IMPLICATIONS FOR NURSING PRACTICE

Coronary angioplasty is currently practiced in a high turnover, short stay environment. Whilst a shorter hospital stay minimises cost, it also reduces the time available for nurses to spend helping and teaching their patients [26]. Supportive nursing care following the PTCA is recognised as very brief and a tendency toward mechanistic, dehumanised care has been reported [6].

The current study has highlighted the importance the participants placed on psychological and physical coping strategies. Nurses have a role to play in helping people come to terms with some of the challenges they may face by offering useful advice on coping strategies. In most cases, nurses have 24 hours with these patients and in that short time need to establish and meet the patients' education needs. Nurses can advise patients on what to expect during recovery with knowledge gained from studies such as this.

Nurses have the potential to extend their support to the post discharge recovery phase. Participants in the current study identified that psychological support was very important. This may be achieved by follow up calls by nurses, or establishing phone help that the patient could call to discuss any feelings or concerns. It could also provide an avenue for families to gain access to nursing support.

CONCLUSION

This study has provided a deeper understanding of the patients' perceptions of recovery. Most participants experienced a relief from chest pain. Others did not and a few required re-admission to hospital for further treatment. Clearly recovery after coronary angioplasty represents a period of readjustment for people who may be experiencing anxiety related to uncertainty over the future.

Participants managed by using both psychological and physical coping responses to regain control over their life. The recovery was deemed either good or bad in the participants' final appraisal. Presence or absence of chest pain, complications and perceptions of well-being influenced the final appraisal.

Coronary angioplasty care is currently practiced in a short stay, high turn over environment. These forces limit the time nurses can spend helping and teaching patients. The knowledge gained from this research can help nurses expand their practice to both the physical and psychological aspects of holistic care. Increased awareness of recovery patterns can help nurses in their pre-discharge teaching practices. Nurses must also consider balancing short stay admission with extended nursing support during the recovery phase after discharge. The challenge described is to explore innovative ways of helping people recover after angioplasty.

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